

# ECE 2043: Fundamentals of CPE I Lab

## Class Meetings

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Section 001: T 8:00-10:20 Online (Zoom)

Section 002: R 8:00-10:20 Online (Zoom)

Section 003: M 12:40-3:00 Online (Blackboard Collaborate)

## Instructors

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Dr. James Peyton Jones

Tolentine 422

610-519-4216

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Online Office Hrs: T 10:20-12:00

Dr. Danai Chasaki

Tolentine 435A

610-519-4979

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Online Office HRs: M 2-4 pm

Dr. Richard Perry

Tolentine 435

610-519-4969

[richard.perry@villanova.edu](mailto:richard.perry@villanova.edu)

## Course Objectives

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Topics include:

Number systems (signed and unsigned), conversions, Binary arithmetic, digital logic design both combinatorial and sequential, counters and state machines as well as learning VHDL (a hardware creation language) to implement the digital logic.

ABET Outcomes:

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions

## Schedule

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Sessions will be online, accessed through the VU Zoom link on the Blackboard course homepage.

There are six labs to be done this semester. The six labs must be done in order. Each lab assignment comes with an instruction sheet and sometimes additional material. Some labs have 'prep-work' that must be completed **prior** to the start of lab. No lab reports are necessary, but some uploads are required.

Lab #0	Introduction, Installation and Board distribution	Tue 8/18
Lab #1	Getting Started with Digital Logic	Tue 8/25 and 9/1
Lab #2	Combinatorial Circuit Design	Tue 9/8 and 9/15
Lab #3	Introducing ModelSim and VHDL	Tue 9/22 and 9/29
Lab #4	Sequential Circuit Design using Schematics	Tue 10/6 and 10/13
Lab #5	Sequential Circuit Design Using VHDL	Tue 10/20 and 10/27
Lab #6	Sequential Traffic Light Controller	Tue 11/3 and 11/10

## Grading Policy, Requirements, and Due Dates

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To pass a lab, all the bolded check off points in the lab instructions and all uploaded items need to be complete by the due dates specified below:

- Lab #1 No prep-work; All items completed by the end of the second lab session for Lab #1, (9/1).
- Lab #2 Prep-work: Part 2.1 uploaded **before** start of first Lab#2 session, (9/8).  
Prep-work: Part 2.4 uploaded **before** start of second Lab#2 session, (9/15).  
All items complete and uploaded by the end of the second session for Lab #2, (9/15).
- Lab #3 No prep-work; All items complete and uploaded by end of second session for Lab #3 (9/29).
- Lab #4 Prep-work: Part 4.2 (Logic expressions) uploaded **before** start of first Lab#4 session, (10/6).  
Part 4.3 (Logic expressions) uploaded **before** start of second Lab#4 session, (10/13).  
All items checked off by the end of the second session for Lab #2, (10/13).
- Lab #5. No prep-work; All items completed and uploaded by end of second session for Lab #5 (10/27).
- Lab #6 No prep-work; All items completed and uploaded by end of second session for Lab #6 (11/10)

Your grade will depend on how many labs you complete, and by your online attendance record as *tentatively* shown in the table below. **For incomplete or late labs, a further two points will be deducted from your final lab grade for each unexcused absence.** [Note: Lab attendance and duration is logged automatically by zoom. Attendance for less than half the formal lab session time will be counted as an absence].

<u>Last Lab Completed</u>	<u>Grade</u>	<u>Numerical</u>
Lab #6	A	95
Lab #5	B	85 – 2*(unexcused absences)
Lab #4	C	75– 2*(unexcused absences)
Lab #3 or earlier	F	55– 2*(unexcused absences)

## Course Materials

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Lab Assignments and Project files are found under the BlackBoard course home page

BOOK: Logic Circuits & Logic Design with VHDL, 2<sup>nd</sup> by B. LaMeris ISBN: 9893030124885 (used in class, reference for lab)

## Attendance

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Attendance is not mandatory, but (as noted above) it will be logged automatically and any late or incomplete assignments will receive a further penalty of 2 points per unexcused absence.

Where possible, students should inform their instructors if they plan to be late or absent from class. In all cases, students should be prepared to provide documentation to petition for *excused* absences to the Associate Dean for Student and Strategic Programs, Dr. Stephen Jones. Students should use the [form for requesting an excused absence](#). Excused absences do not count toward a failure in the course for first year students. Absence from class does not release the student from work assigned. Students who miss an in-class obligation (exam, presentation, etc.) due to an excused absence will not be penalized - the instructor may

offer a make-up test, arrange an alternative time for a presentation, exempt a student from the assignment, or provide another arrangement.

The University's list of excused absences for all students includes the following:

- participation in NCAA athletic competitions
- participation in special academic events (e.g., conferences, field trips, project competitions)
- participation in official university business (e.g., student representatives attending meetings related to university governance)
- attendance at significant events involving the immediate family (e.g., funerals, weddings)
- religious holidays - see the University's policy on Religious Holidays
- college-approved participation in placement activities (e.g., job interviews, graduate school interviews, attending job fairs)
- legally required absence (jury duty, court appearance, short-term military service)
- documented serious illness or disability

## Academic Integrity

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The College of Engineering is committed to creating an environment of academic integrity and ethical decision-making that we hope is reflected in the actions of our students and graduates. As Villanova students, integrity is central to the University mission. As engineers, our code of conduct requires us to place honor and integrity at the forefront of everything we do. As engineering students, it is expected that you will begin to adopt these values and instill them into your work habits. Students violating the academic integrity policy will receive a zero on that assignment or exam and the violation will be reported to the Associate Dean for Academic Affairs.

Students are encouraged to read the [University's academic integrity policy](#).

## Inclusive Classroom

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We consider this classroom to be a place where you will be treated with respect; and, we welcome individuals of all ages, backgrounds, beliefs, ethnicities, gender, gender identities and expressions, sexual orientation, and other visible and non-visible differences. All members of this class are expected to contribute to a respectful, welcoming, and inclusive environment for every other member of the class.

## Adherence to the Student Code of Conduct and the CARITAS Commitment

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Students are expected to act in a professional and respectful manner to their fellow students, faculty, and staff. Students should become acquainted with and understand the responsibilities set forth in the Student Handbook, especially those in the sections on Policy and Regulations. Adherence to University regulations is expected and required for successful completion of the program of studies. Enforcement within the classroom of policies regarding classroom behavior is the responsibility of the faculty member. All other discipline problems are to be referred to the Dean of Students.

Students, faculty, and staff are expected to comply with the [CARITAS Commitment](#). Students must wear masks, practice social distancing and good hygiene, wipe down their work area upon arrival and departure, and request an excused absence if they are not feeling well.

## Online Expectations

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To foster a professional environment, please wear appropriate clothes, mute if you are not talking to cut down on background noise, refrain from eating, and select an appropriate setting when we are meeting online.

## Students with Disabilities

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It is the policy of Villanova to make reasonable academic accommodations for qualified individuals with disabilities. If you are a person with a disability please contact me after class or during office hours to make arrangements.

If you have a non-physical disability you need to register with the Learning Support Office by contacting 610-519-5176 or at [learning.support.services@villanova.edu](mailto:learning.support.services@villanova.edu) as soon as possible. Registration is needed to receive accommodations.

The Office of Disability Services collaborates with students, faculty, staff, and community members to create diverse learning environments that are usable, equitable, inclusive and sustainable. The ODS provides Villanova University students with physical disabilities the necessary support to successfully complete their education and participate in activities available to all students. If you have a diagnosed disability and plan to utilize academic accommodations, please contact and register with Gregory Hannah, advisor to students with disabilities @ 610-519-3209 or visit the office on the second floor of the Connelly Center.

## Electronics Policy

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The use of electronic devices, such as phones, laptops, tablets, etc., during class is generally fine, unless you become a disturbance to others.

Students are prohibited from making any audio or visual recordings (including taking photographs) of lectures, discussions, or other classroom activities, unless a student (1) has written permission in advance from the instructor, or (2) is permitted to record under terms and conditions as approved by the University's Office of Disability Services or Learning Support Services. Students who have received approval to record classes as an academic accommodation must provide supporting documentation from the Office of Disability Services or Learning Support Services in advance of any recording. Students may use authorized recordings only for the purposes of individual study in the course, and may not disseminate or share them with a wider audience without explicit permission.

## Copyright Policy

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The materials used in Villanova University courses ("Course Materials") generally represent the intellectual property of course instructors, third parties and/or the University which may not be disseminated or reproduced in any form for public distribution (e.g., sale, exchange, etc.) without the written permission of the course instructor. Course Materials include all written or electronic documents and materials, including syllabi, current and past examination questions/answers, and presentations such as lectures, videos, PowerPoints, etc., provided by a course instructor. Course Materials may only be used by students enrolled in the course for academic (course-related) purposes.

Published course readings (book chapters, articles, reports, etc.) available in Blackboard are copyrighted material. These works are made available to students through licensed databases or fair use. They are protected by copyright law, and may not be further disseminated or reproduced in any form for distribution (e.g., uploading to websites, sale, exchange, etc.) without permission of the copyright owner.

Follow these links for more information about [intellectual property](#), [copyright](#), and [computer acceptable use](#).

## Professorial Duties

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It is important to note that teaching is one of the many duties that professors perform as part of their job responsibilities. In addition to teaching, professors perform research, advise graduate students, edit journals and review journal articles, serve on committees for the university and professional societies, travel to conferences to remain abreast of current developments and to present their results... to name just a few. As a result, assigned dates for lecture might need to change, as well as office hours.